North Dakota Department of Health
Division of Air Quality

Response to Public Comments Regarding Issuance of an Air Pollution Control Permit to Construct for the GTLE Dakota Plant 1 LLC Coal Beneficiation Plant

June 19, 2009

This document contains a summary of public comments received during the public comment period for which a response was necessary for the GTLE Dakota Plant 1 LLC Coal Beneficiation Plant (hereafter referred to as the GTL Energy facility). The North Dakota Department of Health (hereafter referred to as the Department) response to each comment is also shown below.

Comment #1:

The GTL Energy facility is only one part of a larger development. The total impact from the entire development must be analyzed in a single analysis. Issuance of a permit for the GTL Energy facility will ease the permitting process for the larger development.

Response to Comment #1:

To date, the Department has received two air quality permit applications for facilities located near South Heart. One facility is the GTL Energy coal beneficiation plant (GTL Energy facility), while the other facility is the South Heart Lignite Mine (SHLM) with a capacity of approximately 300,000 tons of lignite annually. The permit application for the SHLM was withdrawn on March 25, 2009. Two other facilities which have been discussed for the area include a larger lignite mine and a coal gasification plant; however, no permit applications have been submitted to the Department.

It is important to note that detailed information is required to analyze the air quality impact of a facility or group of facilities. When determining the air quality impact of a proposed facility, the Department includes the impact of nearby emissions sources. Nearby emissions sources include existing facilities and those facilities for which a complete permit application has been received. It is not possible to estimate the air quality impact of potential facilities for which no information is available.

Should an air quality permit be issued for the GTL Energy facility, the analysis completed for any future facilities (e.g., the SHLM, a larger lignite mine or a gasification plant) to be located near the GTL Energy facility will consider the impact of emissions from the GTL Energy facility in the analysis, so the air quality permitting process for future developments is in no way eased by issuance of a permit for the GTL Energy facility.

See the response to Comment #4 for additional discussion regarding permitting of the facilities.

Comment #2:

GTL Energy must have a clear plan for dealing with the particulate matter (soot) and the Department must require a detailed monitoring plan, including who will do the monitoring and how it will be reported.

Response to Comment #2:

The majority of the particulate matter expected to be emitted from the GTL Energy facility is coal dust from the processing of coal at the facility. Very little "soot" (unburned carbon) is expected from the facility since the only fuel combusted at the facility is natural gas.

Emissions of coal dust from the facility will be controlled by baghouses (fabric filters), which control greater than 99% of the particulate matter emissions. Baghouses are commonly used to control emissions of coal dust and are a reliable emissions control technology. The draft air quality permit requires emissions testing to demonstrate that particulate matter emissions are below the levels allowed by the permit. The draft air quality permit also requires GTL Energy to maintain and operate the baghouses in a manner consistent with good air pollution control practice for minimizing emissions. Good practices include monitoring of visible emissions from the stack and maintaining the control equipment. In general, a properly operated and maintained baghouse which is used to control coal dust will have little or no visible emissions. The Department will monitor the facility periodically to observe visible emissions. If excessive visible emissions are observed, corrective action will be required.

Comment #3:

There is uranium in the coal at South Heart. Neither GTL Energy nor Great Northern Power Development have said how they plan to deal with this hazardous material.

Response to Comment #3:

An air quality permit application was submitted by Great Northern Power Development on October 15, 2008 for the South Heart Lignite Mine. In a November 7, 2008 letter, the Department deemed the application to be incomplete. The Department required additional information regarding uranium and erionite in the mining area before continuing review of the South Heart Lignite Mine application. However, the South Heart Lignite Mine permit application was withdrawn on March 25, 2009 and Department review of the permit application has ceased.

To further assess potential emissions of uranium from the GTL Energy facility, the Department searched the U.S. Geological Survey (USGS) Coal Quality Database

(accessible at http://energy.er.usgs.gov/coalqual.htm) and found that the highest sampled uranium concentration for any lignite coal in the United States is 17 parts per million (ppm). Assuming only this particular coal is processed at the GTL facility results in predicted concentrations near the facility which are approximately 11,000 times below acceptable levels. It should be noted that, of the samples of lignite coal in the USGS Coal Quality Database, approximately 96% of the samples have uranium concentrations of less than 5 ppm.

Based upon the above, the Department concludes that the concentration of uranium in the ambient air due to emissions from the GTL Energy facility is expected to be significantly below acceptable levels. In response to concerns regarding uranium, the Department has added a condition to the GTL Energy permit which requires GTL to analyze the coal for uranium. A copy of the conditions added to the GTL Energy permit is included as Attachment D to this document.

Comment #4:

The GTL Energy facility and the South Heart Lignite Mine (SHLM) should operate under a single air permit. This will ensure that that the health impacts from the facilities are adequately considered.

Response to Comment #4:

Issuance of separate air emission permits to the GTL Energy facility and the SHLM in no way eases the air quality requirements applicable to either facility. The same requirements apply to each facility whether one permit is issued for both facilities or separate permits are issued. Since the GTL Energy facility and the SHLM were to be operated by different entities and were to be located on separate property, the Department intended to issue separate permits for the facilities. Again, this would in no way lessen the air quality requirements applicable to either facility.

As indicated previously, the permit application for the SHLM was withdrawn on March 25, 2009.

Comment #5:

There is no consideration of the greenhouse gas emissions that will result from operation of the GTL facility. Quantifying the potential greenhouse gas emissions from the processed lignite must be done with the draft permit.

Neither GTL nor the Department addressed greenhouse gas emissions from the boiler at the GTL facility, despite the fact that the U.S. Supreme Court has declared carbon dioxide an “air pollutant” as defined by the Clean Air Act.

Response to Comment #5:

The Department estimates the maximum potential carbon dioxide emissions from the facility to be approximately 32,000 tons/year.

There are currently no air quality rules or regulations which restrict emissions of carbon dioxide; therefore, the Department does not consider carbon dioxide to be a regulated air pollutant. The United States Environmental Protection Agency (EPA) recently proposed a regulation to require facilities to report carbon dioxide emissions if emissions exceed approximately 27,560 tons annually. It is anticipated that this information will be used to develop broad national policies or regulations regarding carbon dioxide emissions. Should this reporting regulation be finalized, GTL Energy will be required to comply with the regulation.

Regulation of carbon dioxide and other greenhouse gases is a global concern which is far beyond the scope of an air quality permit for an individual facility. There are currently no federal or state air quality rules or regulations which restrict greenhouse gas emissions from the GTL Energy facility. Should greenhouse gas requirements be established that apply to the GTL Energy facility, then GTL Energy will be required to comply with the requirements. .

Comment #6:

The Department did not consider all air pollution emissions when determining compliance with the Ambient Air Quality Standards.

Response to Comment #6:

The Department did consider all air pollution emissions when determining compliance with the Ambient Air Quality Standards (AAQS). Based on Department experience and the low expected levels of sulfur dioxide, nitrogen oxides and carbon monoxide and the relatively high stack heights of 60 and 65 feet, ambient concentrations of these pollutants are expected to be well below the applicable AAQS.

Nitrogen oxides and volatile organic compounds (VOCs) can combine downstream under certain atmospheric conditions to form ozone, for which there is an AAQS. However, concentrations of ozone exceeding the AAQS are generally only found in metropolitan areas with significant emissions from automobiles. Based on the amount of emissions from the facility, the ambient ozone concentrations surrounding the GTL Energy facility are expected to be well below the AAQS for ozone.

There are no AAQS for hazardous air pollutants (HAPs), which are pollutants (such as uranium, arsenic, etc.) regulated under federal rules by the Environmental Protection Agency. The Department addresses HAP concentrations in the ambient air through the Policy for the Control of Hazardous Air Pollutant Emissions in North Dakota (also known as the Air Toxics Policy). Based on Department experience and the low level of expected HAP emissions, the Department stated in the Air Quality Effects Analysis for

the GTL Energy facility that ambient concentrations of these pollutants are expected to be well below the levels allowed by the Air Toxics Policy. Due to concerns about emissions of trace compounds found in the coal to be processed at the facility, the Department has confirmed that emissions are expected to comply with the Air Toxics Policy by conducting an analysis to determine the predicted HAP concentrations in the ambient air from the processing of the coal. The results of this analysis show predicted ambient concentrations which are well below the levels allowed by the Air Toxics Policy.

The impact of fugitive emissions from the GTL Energy facility is addressed in the response to Comment #13.

Comment #7:

The Department has not determined compliance with the Ambient Air Quality Standards (AAQS) for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Response to Comment #7:

In accordance with current Environmental Protection Agency policy, the Department is assessing compliance with the AAQS for $PM_{2.5}$ by demonstrating compliance with the AAQS for PM_{10}. Utilizing PM_{10} as a "surrogate" to demonstrate compliance with the AAQS for $PM_{2.5}$ is expected to allow time for development of test methods, dispersion modeling techniques, etc. to address emissions of $PM_{2.5}$. Dispersion modeling conducted by the Department predicts that PM_{10} concentrations in the ambient air due to emissions from the GTL facility will be significantly below the AAQS for PM_{10}.

Comment #8:

When conducting dispersion modeling, the Department increased the stack heights as compared to the values provided in the GTL Energy permit application. Since the draft permit mandates minimum stack heights, the draft permit should also mandate certain building heights or at least incorporate the building heights by referencing the permit application in the draft permit. The stack heights in the draft permit require the heights of Building #1 and Building #2 (as labeled in GTL Energy's permit application) to have a height of no more than 17.5 feet.

Response to Comment #8:

The final permit application for the GTL Energy facility was included as an attachment to the Air Quality Effects Analysis for the facility. The stack heights from the permit application and the draft permit are shown in the following table:

Emission Unit	Emission Point Number	Stack Height from the Permit Application (feet)	Minimum Stack Height Required by the Draft Permit (feet)
Boiler	1	60	60
Truck Dump Baghouse	2	65	65
Raw Coal Storage, Handling, Crushing, Conveying and Drying Baghouse	3	65	65
Coal Dryer	4	60	60
Product Coal Storage and Handling	5	65	65

As can be seen from the above, the stack heights from the permit application are identical to the minimum stack heights required by the permit. Therefore, the comment that the Department increased the stack heights from the values included in the permit application is incorrect. Furthermore, the Department may impose stricter requirements in a permit than those requested in a permit application when the stricter requirements are deemed necessary.

This commenter states that the draft permit should also mandate certain building heights or at least incorporate the building heights by referencing the permit application in the draft permit. The draft permit does reference the permit application in Condition II.J., which states, "Construction of the above described facility shall be in accordance with information provided in the permit application as well as any plans, specifications and supporting data submitted to the Department. The Department shall be notified ten days in advance of any significant deviations from the specifications furnished. The issuance of this Permit to Construct may be suspended or revoked if the Department determines that a significant deviation from the plans and specifications furnished has been or is to be made." Based upon this condition, GTL Energy must construct the facility in accordance with the information (including building dimensions) included in the permit application. Therefore, the requirement to construct the facility with certain building heights has already been incorporated into the draft permit.

The commenter states that the stack heights in the draft permit require Building #1 and Building #2 (as labeled in GTL Energy's permit application) to have a height of no more than 17.5 feet. However, the commenter gives no basis for the maximum height of 17.5 feet. The actual proposed building dimensions of the facility were used in the computer modeling analysis conducted by the Department which predicted that the facility will comply with the AAQS for PM_{10}. As indicated above, the GTL Energy must construct the facility in accordance with the building dimensions submitted to the Department.

Chapter 35-15-18 of the North Dakota Air Pollution Control Rules stipulates that, for new sources, credit cannot be given for that portion of the stack height which exceeds GEP height. However, GEP stack height is defined in the North Dakota Rules as the

greater of (1) 65 meters, (2) the calculated GEP height based on building dimensions, or (3) the height demonstrated by a fluid model or field study necessary to avoid excessive concentrations of any air contaminant. Therefore, stack heights up to 65 meters are always allowed, and there is no legal connection between building size and stack height unless building size is large enough to mandate a stack height greater than 65 meters using the calculated GEP height. This is not the case for GTL Energy.

Comment #9:

When conducting dispersion modeling, the Department increased the stack velocities as compared to the values provided in the GTL Energy permit application. The stack exit velocities used in the Department's modeling for baghouses #1 through #4 were 10 feet per second greater than the velocities shown in the permit application. The modeled boiler stack velocity is also 5.95 feet per second greater than the boiler stack velocity shown in the permit application. If these velocities are required for compliance with the AAQS, the draft permit must specify that GTL Energy plant's diameter piping and flow rates be constructed in such a manner that the exit velocities are equal to or greater than the values used by the Department.

Response to Comment #9:

The exit velocities from the permit application, the dispersion modeling analysis and as calculated by the Department (based on the gas flow rates and stack diameters) are shown below:

Emission Unit	**Emission Point Number**	**Stack Gas Velocity from Permit Application (feet/second)**	**Stack Gas Velocity based on Dept. Calculations (feet/second)**	**Stack Gas Velocity Used in Modeling (feet/second)**
Boiler	1	40-50	45.95	45.95
Truck Dump Baghouse	2	40-50	55.2	50
Raw Coal Storage, Handling, Crushing, Conveying and Drying Baghouse	3	40-50	56.9	50
Coal Dryer	4	40-50	53.9	50
Product Coal Storage and Handling	5	40-50	54.8	50

It should be noted that the stack gas velocities shown in the application are only an approximation of the velocities, whereas the calculated velocities are the actual calculated velocities based on the expected gas flow rates and stack diameters. As can be seen from the above, the stack gas velocities used in the modeling analysis are less than or equal to the calculated velocities, so the velocities were not increased by the Department as alleged by the commenter.

The stack velocities used in the modeling analysis are lower than or equal to the actual expected flow rates. This is expected to result in modeled concentrations which are higher than actual concentrations; therefore, model results are conservative.

The commenter also states that the permit must require that the stacks be constructed with appropriate diameters to ensure the velocities are equal to or greater than the velocities used in the modeling. As indicated previously, the draft permit requires GTL Energy to construct the facility in accordance with the information (including stack diameters) submitted to the Department.

Comment #10:

Stack locations were altered. There is an error in the stack X and Y coordinates used for the Department's modeling, which places the stacks outside of the GTL Energy property line.

Response to Comment #10:

Stack locations were provided to the Department by GTL Energy in geographic (latitude, longitude) coordinates. When converting geographic coordinates (latitude, longitude) to UTM (X, Y) coordinates (as required for modeling), the conversion system generally provides options for the datum/standard (NAD27, NAD83, WGS84, etc.) to be used in the conversion process, and slightly different results will be obtained depending on the datum/standard selected. Optimally, the selected datum/standard should be consistent with that incorporated in the terrain data file (DEM).

Based on information in the comment, the commenter assumed the WGS84 standard when converting stack locations from geographic to UTM coordinates, which is different than the standard used by the Department. Thus, the discrepancy in X, Y coordinates. The important issue for accurate modeling, however, is that the X, Y coordinates for stack locations, building locations, fence line locations, and receptor locations all represent a consistent datum/standard, so that locations of these model input items are accurate relative to one another. It appears the commenter assumed the WGS84 standard for stack locations, only, and assumed the Department's coordinates for other input features.

Attachment A to this document includes Figure 1, which is a depiction of the model input configuration as used by the Department for GTL Energy modeling. This figure was developed using the Lakes Environmental AERMOD mapping tool. As illustrated in Figure 1, the Department used great care to ensure that stack locations, building locations, fence line location, and receptor locations are consistent relative to one another. Clearly, the location of all features is accurate, and stacks are not located outside of the GTL Energy property line.

Comment #11:

The surface meteorological data used by the Department for the GTL Energy analysis is not representative of the South Heart area, because it was taken from the Bismarck National Weather Service station. Data from the closer Dickinson station should have been used instead.

Additionally, the Department incorrectly used 6 meters for the meteorological station elevation (PROFBASE keyword) in AERMOD.

Response to Comment #11:

The Department did, in fact, use Dickinson surface meteorological data in its GTL Energy modeling analysis. Possible confusion here is related to the World Meteorological Organization (WMO) numbering convention for meteorological stations. The WMO number for Bismarck is 727640, while the WMO number for Dickinson is 727645. The vendor who provided raw Dickinson surface data to the Department used the 6-digit WMO number to correctly identify the data set. But the Department had to convert the data to the CD-144 format required by AERMET, and the CD-144 format provides only a 5 digit field for the station number. So the Department elected to drop the last digit and use 72764 for the station number in the Dickinson CD-144 surface data set. Obviously, once the last digit is dropped, the Dickinson station number could be confused with the Bismarck station number.

The presence of Dickinson data in the surface data files is easily verified, because the Dickinson data includes some hours with missing data, while Bismarck does not.

Regarding meteorological station elevation, the Department agrees that the 6 meter value used for the PROFBASE keyword is not correct. Using the corrected value of 505 meters, the Department reran AERMOD, and obtained results equivalent to those obtained with the erroneous value. Results were equivalent to the last decimal place included on the standard AERMOD output file. It is concluded that the model is not sensitive to the PROFBASE input value.

Comment #12::

There is insufficient information to determine compliance with the Ambient Air Quality Standards (AAQS). The dispersion modeling conducted by the Department did not include the impact of the emergency generator and emissions of particulate matter, particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$) and sulfur dioxide from the emergency generator were not quantified.

Response to Comment #12:

Although emissions from the emergency generator will be vented from a relatively short eight foot stack, the AAQS for nitrogen dioxide is an annual standard. Compliance with

an annual standard is highly dependent upon annual emissions (as opposed to short-term emissions). Since the emergency generator will only operate during emergencies, maximum annual emissions are expected to be low at 5.5 tons/year (this assumes that the generator operates 500 hours/year, which is unlikely based upon Department experience). Based on Department experience and the low expected annual emissions of nitrogen oxides from the facility of approximately 15 tons/year, ambient concentrations of nitrogen dioxide are expected to be well below the AAQS for nitrogen dioxide.

A small amount of volatile organic compound (VOC) emissions are expected from the emergency generator. As indicated previously, VOC emissions can contribute to ozone formation in the ambient air; however, VOC emissions from the facility (including VOC emissions from the emergency generator) are expected to result in ozone concentrations well below the AAQS for ozone.

A small amount of carbon monoxide is expected to be emitted from the emergency generator. As indicated previously, carbon monoxide emissions from the facility (including carbon monoxide emissions from the emergency generator) are expected to result in carbon monoxide concentrations well below the AAQS for carbon monoxide.

Emissions of particulate matter and sulfur dioxide from the natural gas-fired emergency generator are considered to be negligible and were not quantified by the Department. Emissions of these pollutants can be quantified using emission factors from Environmental Protection Agency publication AP-42, Section 3.2. Using these emission factors, the Department calculates expected emissions from the generator of less than 0.05 lb/hr of particulate matter, less than 0.05 lb/hr of PM_{10}, less than 0.05 lb/hr of $PM_{2.5}$ and less than 0.005 lb/hr of sulfur dioxide. These emissions are considered to be negligible and are expected to have a negligible effect on ambient pollutant concentrations.

Comment #13:

Fugitive emissions were not considered in the Air Quality Impact Analysis. Fugitive emissions must be quantified to ensure compliance with the AAQS.

Response to Comment #13:

The vast majority of emissions generated in the buildings are expected to be captured by the baghouses and fugitive emissions from the enclosed buildings are expected to be minimal. The Department has estimated fugitive PM_{10} emissions from the crushing operation to be less than 0.05 lb/hr. Fugitive emissions from other sources contained inside the buildings are also expected to be minimal. Fugitive emissions from other on-site activities are addressed in the response to comment #49.

Fugitive emissions from on-site activities are expected to be minimal. The impact of these minimal fugitive emissions was accounted for in the fixed PM_{10} background

concentrations which were added to dispersion modeling predictions (i.e., 30 $\mu g/m^3$ 24-hr and 15 $\mu g/m^3$ annual average).

Comment #14:

Re-running the dispersion modeling shows impacts of PM_{10} which are significantly greater than the values reported in the Air Quality Impact Analysis. The Department's modeling produced maximum predictions of 11.95 $\mu g/m^3$ 24-hour average and 1.58 $\mu g/m^3$ annual average. Re-running the AERMOD analysis with "correct" parameters provided maximum predictions of 84.61 $\mu g/m^3$ 24-hour average and 30.58 $\mu g/m^3$ annual average.

Response to Comment #14:

As one obvious cause of the discrepancy, it appears that the commenter added background concentrations to their reported modeling results, but omitted background concentrations from the results reported for the Department's modeling. Otherwise, the Department cannot comment on the modeling results reported by the commenter, because no information was provided regarding procedure or inputs.

The Department's position is that its modeling analysis is accurate, and was conducted using appropriate stack heights, stack exit velocities, stack locations, meteorological data, and accounting for fugitive emissions, as well as appropriate values for all other model inputs. As noted in the response to comment #11, the correction of station elevation in the AERMOD input file made no difference in results. Along with the use of appropriate input conditions, the Department's modeling procedure strictly adhered to EPA recommendations regarding the regulatory used of AERMOD. Therefore, without additional information, we must assume that remaining discrepancies between the Department's and the commenter's modeling results are due to the use of some inappropriate inputs or procedure on the part of the commenter.

Comment #15:

The Air Quality Impact Analysis does not consider planned growth. The Department did not consider the other proposed facilities when it modeled the air quality impacts of the GTL Energy facility.

Response to Comment #15:

As indicated in the response to comment #1 above, the Department will analyze the emissions impact of each future facility as part of the evaluation process for a Permit to Construct for each future facility. Each analysis must take into consideration the emissions from all existing facilities to ensure that the Ambient Air Quality Standards (AAQS) are not exceeded. Therefore, a new facility will not be issued a Permit to Construct and will not be allowed to operate unless it is demonstrated that all AAQS will be met.

Comment #16:

The entire projects impact on water quality and water supply needs to be addressed before permit issuance.

Response to Comment #16:

The Department is currently considering issuance of an air quality permit for the GTL Energy facility. Water quality and water supply issues are not addressed in an air quality permit. However, information provided by GTL Energy indicates that water for the facility will be supplied by the Southwest Pipeline. The water for the facility is required for use in the boiler at the facility. GTL Energy has also indicated that no water will be discharged from the facility.

Further questions regarding water quality issues may be addressed to the Division of Water Quality at 701-328-5210. Further questions regarding water supplies may be addressed to the State Water Commission at 701-328-2780.

Comment #17:

The development will alter our way of life and the Department should look at all of the environmental, social and health impacts of the development.

Comment #18:

The development will harm farming and ranching interests in the area. This area should be kept a farming community.

Response to Comment #17 and Comment #18:

The purpose of issuance of an air quality permit is to ensure that emissions from a facility comply with the current air quality rules. Broader issues related to development of the area such as the societal impact of development of the area are beyond the scope of an air quality permit.

Comment #19:

Global climate change is a concern and there should be more focus on non-fossil fuels. Coal is a dirty source of energy and should not be allowed.

Response to Comment #19:

The purpose of issuance of an air quality permit is to ensure that emissions from a facility comply with the current air quality rules. Broad policy changes and fuel mandates require changes to laws and/or regulations and are beyond the scope of an air quality permit.

Comment #20:

I am concerned about the impact of the project on Theodore Roosevelt National Park.

Response to Comment #20:

Protection of the air quality in Theodore Roosevelt National Park (TRNP) is a high priority of the Department. The Department understands that the public is concerned about the impact of a larger development on the air quality in TRNP. As indicated previously, before an air quality permit is issued for a facility, the air quality impact of the proposed facility as well as the impact of any existing facilities must be considered.

The GTL Energy facility is classified as a minor source of air pollution and a computer dispersion modeling analysis has shown that concentrations of particulate matter less than 10 microns (PM_{10}) will be well below the Ambient Air Quality Standards for PM_{10}. The maximum PM_{10} concentrations in the air are expected to occur within 100 yards of the proposed facility and the concentrations are expected to decrease dramatically farther away from the facility. Since TRNP is located several miles from the proposed GTL Energy facility, the impact of PM_{10} emissions from the GTL Energy facility is expected to have a negligible impact on air quality in TRNP.

Emissions of air contaminants other than PM_{10} from the GTL Energy facility are expected to result in off-property concentrations in the ambient air that are well below the applicable Ambient Air Quality Standards and the impact of emissions from the facility is expected to have a negligible impact on air quality in TRNP.

Comment #21:

I am concerned about uranium waste. Uranium is hazardous if not handled properly. North Dakota should not be a dumping ground for hazardous waste.

Response to Comment #21:

The GTL Energy facility will only process coal to remove the moisture from the coal and form the coal into briquettes. Uranium occurs in trace amounts in coal; however, the uranium will remain in the coal and will not be concentrated. The facility is not expected to generate any hazardous waste or any uranium-containing waste.

Comment #22:

How much uranium is in the coal and how will the amount of uranium be monitored?

Response to Comment #22:

As indicated in the response to comment #3, coal commonly contains trace amounts of uranium. The uranium will not be concentrated at the GTL Energy facility and emissions

of uranium from the facility are expected to be very low. Due to concerns regarding uranium in the coal to be processed at the facility, a condition has been added to the GTL Energy permit which requires a uranium analysis of each coal processed at the facility. A copy of the conditions which have been added to the GTL Energy permit is included as Attachment D to this document.

Comment #23:

What are the emission rates for small particulate matter?

Response to Comment #23:

The maximum potential emission rate of particulate matter less than 10 microns (PM_{10}) from the GTL Energy facility are calculated to be approximately 22.4 tons/year. This classifies the facility as a minor source of PM_{10} emissions. Computer dispersion modeling predicts that PM_{10} concentrations in the ambient air will be well below the Ambient Air Quality Standards for PM_{10}.

Comment #24:

What are the emission rates for carbon dioxide?

Response to Comment #24:

Maximum carbon dioxide emissions from the GTL Energy facility will be approximately 32,000 tons/year. There are currently no air quality rules restricting carbon dioxide emissions from the GTL Energy facility. The Environmental Protection Agency has proposed a rule that requires a facility to report carbon dioxide emissions if the emissions exceed approximately 27,560 tons annually. If this rule is finalized, GTL Energy will be required to comply with the applicable reporting requirements of the rule.

See the response to comment #5 for more information regarding carbon dioxide emissions.

Comment #25:

What happens to the trace amounts of mercury and other heavy metals in the coal?

Response to Comment #25:

Mercury and other heavy metals occur in trace amounts in coal. The GTL Energy facility dries coal and forms the coal into briquettes. The facility does not concentrate or remove the heavy metals from the coal. A small fraction of the particulate matter emitted from the baghouse stacks at the facility is expected to contain trace amounts of heavy metals. The Department has conducted an analysis to predict the maximum concentration of hazardous air pollutants (including mercury, cadmium, etc.) which will occur in the

ambient air surrounding the facility. The results of the analysis show that ambient concentrations of these pollutants will be well below acceptable levels. The maximum concentrations in the air are expected to occur within 100 yards of the proposed facility and the concentrations are expected to decrease dramatically farther away from the facility.

Comment #26:

GTL Energy's technology could not only drastically increase the rate of mining near South Heart, but also throughout North Dakota. The Department should hear public comments on the need to study and report on the potential air quality impacts from such expanded mining, so that we and other North Dakotans can understand the balance of interests we face.

Response to Comment #26:

The comment raises broad policy issues which are beyond the scope of the air quality permit for the GTL Energy facility. Any future increases in mining will be subject to appropriate environmental protection regulations.

Comment #27:

We do not believe the current development push for uranium and molybdenum mines has been fully considered in past EIS reviews for the area. The cumulative effects of these processing plants and mines, along with other energy development activity, needs to be given comprehensive consideration.

Response to Comment #27:

The GTL Energy facility will not be involved in the mining or processing of uranium or molybdenum. It should also be noted that a detailed review will be conducted for any future mining projects.

Comment #28:

The spokesman for Great Northern Power Development says the plant will be a closed system. Then why are there smoke stacks in the building plans?

Response to Comment #28:

The GTL Energy processing equipment will be enclosed in buildings. However, the processes generate coal dust which must be vented from the buildings. The exhaust from the process areas are vented to baghouses which remove greater than 99% of the coal dust before venting the cleaned air through stacks. The boiler at the facility combusts natural gas and also exhausts through a stack.

Comment #29:

The GTL Energy process will remove water from the lignite, giving it a higher heating value per pound or ton. What about the sulfur and nitrogen in the lignite? Some of that will be removed and is it going to go into the water or be emitted as air pollutants in the form of sulfur dioxide and/or nitrogen oxides?

Response to Comment #29:

The sulfur and nitrogen in the coal is expected to remain in the coal and not be removed by the drying process. Sulfur dioxide and nitrogen oxides are formed when coal is combusted. Since the coal will not be combusted at the GTL Energy facility, sulfur dioxide and nitrogen oxides emissions will not be produced by the drying process. Emissions of sulfur dioxide and nitrogen oxides from natural gas combustion have been reviewed and have been determined to be in compliance with air pollution requirements.

Comment #30:

If this is supposed to be a cleaning process, the treated coal is going to be higher in percentage of sulfur, nitrogen and possibly other pollutants, such as mercury, uranium, molybdenum and others.

Response to Comment #30:

Since only water is being removed from the coal, the total amount (mass) of trace elements will remain the same.

Comment #31:

What it going to happen to the water that is removed from the coal?

Response to Comment #31:

The water from the coal will be vented to the dryer stack and will be emitted to the atmosphere as water vapor. Water from the coal will not be collected at the GTL Energy facility.

Comment #32:

There is evidence of a higher incidence of respiratory disease, cancer and other health problems downwind from the power plants and gasification plant in the Beulah/Hazen area. With this possibility of higher health problems in our area, GTL Energy should be required to get an air quality permit and have it certified before they are allowed to finish constructing their plant and then processing coal.

Response to Comment #32:

GTL Energy is required to obtain an air quality permit from the Department before coal can be processed. Once coal is processed, testing will be conducted to measure emissions from the plant and to verify compliance with air pollution requirements.

The GTL Energy facility will only be drying coal and will not be combusting coal or gasifying coal. Should a coal gasification plant be proposed for the South Heart area, a thorough analysis will be conducted prior to issuing an air pollution control permit to construct for the facility.

The Department has reviewed the information in the North Dakota Cancer Registry and has not found a statistically significant difference in cancer rates between Mercer County (which includes Beulah and Hazen) and the rest of North Dakota. Any new coal gasification plant constructed in the South Heart area will be required to demonstrate compliance with the ambient air quality standards, which are established to protect human health.

Comment #33:

Will the GTL Energy facility comply with the "prevention of significant deterioration of air quality" requirements? This facility is located too close to a national park not to consider prevention of significant deterioration of air quality requirements.

Response to Comment #33:

The federal Prevention of Significant Deterioration of Air Quality (PSD) rules apply to sources classified as "major stationary sources". The GTL Energy facility is well below the major source levels, so the PSD requirements do not apply. If the PSD rules applied to the GTL Energy facility, a modeling analysis would be required and the facility would be required to install the best available controls to control emissions from the facility. Even though the PSD rules do not apply to the GTL Energy facility, the Department has conducted a modeling analysis which shows that predicted concentrations of particulate matter less than 10 microns (PM_{10}) are well below the applicable Ambient Air Quality Standards. In addition, the pollution controls required by the air quality permit to control particulate matter emissions are the best controls available.

Comment #34:

As an emergency manager I question the suitability of the structure which has been built for the GTL Energy facility.

Response to Comment #34:

The Department does not have the authority to address structural issues. We recommend that the commenter contact the appropriate local authority regarding these issues.

Comment #35:

Erionite in the gravel on the roads will be disturbed by the trucks hauling coal to the GTL Energy facility. This should be studied before issuing a permit to GTL Energy.

Response to Comment #35:

The Department is currently conducting studies to determine the health effects of erionite exposure. Information regarding erionite and the Department's medical study is attached to this document. Additional information can be obtained by contacting the Department or at the following website: http://www.ndhealth.gov/EHS/Erionite/

Fugitive emissions from the haul roads are addressed in the response to comment #49.

Comment #36:

The holding ponds, where the water extracted from the lignite and other coals would be stored, is assumed to have some residual contaminants. This water would run quickly to the river in the event of a failure of the holding ponds.

Response to Comment #36:

The water extracted from the coal will be released as water vapor and will not be collected; therefore, there will be no holding pond for water extracted from the coal.

Comment #37:

Never has the company contacted our regional fire district, of which I am a board member, regarding their unique needs in the event of an emergency.

Response to Comment #37:

This issue is beyond the scope of an air quality permit. The Department recommends that the local authorities be contacted to resolve this issue.

Comment #38:

Studies show that individuals living in "coal country" near power plants have a higher rate of respiratory problems. The gasification plant and coal mine will cause similar respiratory problems.

Response to Comment #38:

The Department is currently considering issuance of an air pollution control permit to construct for the GTL Energy facility. This facility will only dry coal and will not

combust or gasify coal. An extensive analysis of expected emissions from any future gasification plant and/or coal mine will be conducted prior to issuance of an air pollution control permit to construct for the gasification plant and/or coal mine. The analysis must demonstrate that the impact of emissions from the proposed facilities (including the impact from the GTL Energy facility) complies with all ambient air quality standards, which are established to protect human health and the environment. The analysis must also demonstrate that the emission controls utilized are the best controls available.

Comment #39:

The GTL Energy facility, the coal gasification plant and the coal mine should be considered the same source of air pollution since the facilities are under "common control" and will be located on the same site.

Response to Comment #39:

Under the applicable Environmental Protection Agency regulations and guidance, separate facilities must be considered the same air pollution "source" if certain criteria are met. The criteria used to determine if separate facilities must be considered the same source include whether the facilities are located on contiguous or adjacent property, whether the facilities are under "common control", whether the facilities are classified under the same Standard Industrial Classification (SIC) code and whether one facility operates as a "support facility" for another facility.

A "source" determination requires very detailed information which is obtained through the air quality permitting process. If permit application(s) are received for a gasification plant and/or a coal mine, the permit applications must include all information necessary for the Department to determine if the gasification plant, coal mine and/or the GTL Energy facility must be considered the same source of air pollution. The Department will make the "source" determination after receipt of the complete permit application(s).

Comment #40:

Coal development in the area will benefit the coal companies at the expense of the current residents.

Response to Comment #40:

This comment raises issues that are beyond the scope of an air quality permit.

Comment #41:

The Department is making determinations based only on information submitted by GTL Energy. How does the Department know this information is accurate?

Response to Comment #41:

In the air quality permitting process, the company supplies information regarding the equipment to be installed and operated at a facility, the pollution control equipment to be employed at the facility as well as the expected emissions from the facility. The Department reviews the information and verifies the accuracy of the information based on the technical knowledge and experience of Department staff. In the case of the GTL Energy facility, the Department also performed additional calculations for pollutants and conducted a computer dispersion modeling analysis to predict pollutant concentrations in the ambient air. Through the air quality permitting process, the Department independently verifies that emissions from the facility are expected to comply with all applicable air quality rules and will not adversely affect air quality.

Comment #42:

On May 7, 2009, the Teddy Roosevelt Group of the Sierra Club submitted a comment letter. Due to the complexity of the issues raised in the letter, the entire letter is included as Attachment B to this document.

Response to Comment #42:

The proceeding was properly conducted in accordance with N.D. Admin. Code § 33-15-14-02, which lists the procedures the Department must follow when determining whether to issue a permit to construct. Consistent with N.D. Admin. Code § 33-15-14-02(6)'s public participation procedures, the Department allowed the public to submit written comments on the proposed permit. This rule does not require the Department to hold any type of formal hearing. The Department held the April 28, 2009 public hearing in order to receive additional public comment on the proposed permit.

N.D.C.C. ch. 28-32's adjudicative and rulemaking procedures are not applicable to this proceeding. Under N.D.C.C. § 23-01-23, a permit hearing conducted to receive public comment "is not an adjudicative proceeding under chapter 28-32." And, because a permit is not a "rule" within the meaning of N.D.C.C. § 28-32-01(11), a permit proceeding is therefore not subject to N.D.C.C. ch. 28-32's rulemaking procedures.

N.D. Admin. Code art. 33-22's adjudicative procedures are also not applicable to this proceeding. N.D. Admin. Code art. 33-22's adjudicative procedures are "in addition to or in explanation of" procedures provided by N.D.C.C. chs. 23-25 and 28-32. N.D. Admin. Code § 33-22-01-01. They do not provide substitute adjudicative procedures for hearings that are exempt from N.D.C.C. ch. 28-32.

Comment #43:

What does GTL stand for?

Response to Comment #43:

This question is not relevant to the air quality permitting process for the GTL Energy facility. According to the company, GTL stands for "gas to liquids" and is a historic acronym with no link to current business operations.

Comment #44:

Has GTL Energy ever been denied permits elsewhere because of air quality standards?

Response to Comment #44:

GTL Energy has never applied for an air quality permit in the State of North Dakota. Whether or not GTL Energy has been denied permits for other projects elsewhere is not relevant to the air quality permitting process. Note that the North Dakota Air Pollution Control Rules are at least as stringent as EPA requirements and a complete review of the proposed project has been completed to determine if the project meets applicable requirements.

Comment #45:

There will be one ton of emissions spilled into the air for every 100 tons of coal (lignite) processed.

Response to Comment #45:

The facility is expected to emit approximately 10.7 pounds per hour of all pollutants (particulate matter, nitrogen oxides, carbon monoxide, sulfur dioxide, volatile organic compounds and hazardous air pollutants) combined. The facility has a maximum processing rate of 45 tons/hour. Therefore, the facility is expected to emit approximately 24 pounds (0.012 tons) of total emissions per 100 tons of lignite processed.

Comment #46:

With lignite development, including a gasification plant or power plant in the South Heart area, the Class I air quality standards will not be met at all times in the Theodore Roosevelt National Park.

Response to Comment #46:

Prior to issuance of an air pollution control permit to construct for future lignite development in the South Heart area, a thorough analysis of the predicted impact of the development will be conducted. The analysis must demonstrate that the Class I air quality standards will not be exceeded in any Class I area, including the Theodore Roosevelt National Park. If the analysis shows that the Class I air quality standards will not be met, an air pollution control permit to construct will not be issued.

Comment #47:

How will GTL Energy dispose of waste from the process?

Response to Comment #47:

The GTL Energy process dries and briquettes coal. No chemicals are added to the coal and any coal dust recovered in the baghouses will be re-introduced into the process. The GTL Energy process is not expected to generate any waste. The Health Department's Division of Waste Management will ensure that the facility meets any applicable regulations.

Comment #48:

The source of lignite for the GTL Energy facility is currently unknown. Without knowing the source of the lignite, the Department is not able to analyze and accurately account for emissions of particulate matter.

Response to Comment #48:

The calculations for particulate matter emissions from the baghouses at the facility are based upon the expected particulate matter concentrations in the baghouse exhaust from baghouses controlling coal dust. These calculations are not dependent upon the type of coal to be processed at the facility.

Comment #49:

Emissions from the hauling of the coal must be considered when assessing the air quality impact.

Response to Comment #49:

The air pollution control permit to construct under consideration is for the GTL Energy facility and the Department will add a condition to the air pollution control permit to construct regarding the control of fugitive emissions from on-site activities at the GTL Energy facility. A copy of the conditions which have been added to the GTL Energy permit is included as Attachment D to this document. Fugitive dust control is expected to minimize the fugitive dust emissions from the plant property.

The off-site haul roads near the facility which will be used to transport the coal are under the control of Stark County. Attached is a copy of an agreement between Stark County and GTL Energy which outlines requirements for the control of fugitive emissions from the haul roads. It is expected that the fugitive dust control requirements included in the agreement will minimize fugitive dust emissions from the haul roads.

These on-site and off-site fugitive dust control requirements are expected to minimize fugitive emissions from the haul roads and result in ambient concentrations of PM_{10} in compliance with the Ambient Air Quality Standards.

Comment #50:

The hauling of coal will adversely impact the county roads.

Response to Comment #50:

Maintenance of the haul roads near the GTL Energy facility is under the jurisdiction of Stark County. A copy of the agreement between Stark County and GTL Energy which outlines the road maintenance responsibilities of GTL Energy is included as Attachment C to this document. Further questions regarding road maintenance should be addressed to Stark County.

Comment #51:

Will the coal be stock-piled at the plant?

Response to Comment #51:

All coal stockpiles will be located inside of the buildings on the GTL Energy property. Attachment D to this document includes a copy of the permit conditions added to the GTL Energy permit. Note that the Department has added a condition which requires all coal stockpiles to be inside of the buildings on the GTL Energy property.

Comment #52:

What are the dangers to the employees working at the plant from the coal dust and uranium?

Response to Comment #52:

Worker protection requirements do not fall under the jurisdiction of the Department. Worker protection requirements are addressed by other agencies such as the federal Occupational Safety and Health Administration (OSHA) and the federal Mine Safety and Health Administration (MSHA).

Comment #53:

GTL Energy and the companies proposing the coal gasification plant and the coal mine are part of the same company or they have a business relationship.

Response to Comment #53:

Whether or not the companies are part of the same company or have a business relationship is only one factor which must be considered when determining whether two facilities must be considered as part of the same air pollution "source" (see response to comment #39). In addition, the relationship of the companies has no bearing on the emissions from the GTL Energy facility. As indicated previously, the air quality impact of any future development will be analyzed thoroughly before an air pollution control permit to construct will be proposed for the development. The air quality analysis for any future development must take into consideration the emissions from the GTL Energy facility.

Comment #54:

Why did GTL Energy choose to hold their public meeting at 10:00 in the morning?

Response to Comment #54:

This question is not relevant to the air quality permitting process for the GTL Energy facility.

Comment #55:

An Environmental Impact Statement should be required to assess all the potential impacts on the air quality, water quality and lives of people in the area.

Response to Comment #55:

The Department has conducted a thorough review of the air quality impact of the GTL Energy facility. It has been demonstrated that emissions from the facility are not expected to result in air pollution concentrations in the ambient air above the allowable levels.

The process at the GTL Energy facility will not discharge process water. Therefore, the process is not expected to adversely impact water quality.

Comment #56:

The Department has the power to prevent the construction and operation of the GTL Energy facility.

Response to Comment #56:

The Department does not have the authority to deny issuance of a permit to a facility which has demonstrated that the facility is expected to comply with the applicable air

pollution control rules. GTL Energy has demonstrated that emissions from the proposed facility are expected to comply with all applicable air pollution control rules.

Comment #57:

The Department's analysis assumed that the coal processed will be lignite from Texas or North Dakota. What if other coal is processed at the plant?

Response to Comment #57:

As indicated in the response to comment #48, the particulate matter emissions from the stacks at the facility are expected to be the same regardless of the type of coal processed. The Department has added a condition to the GTL Energy permit (see Attachment D to this document) which requires GTL Energy to analyze and report concentrations of arsenic, beryllium, chromium, mercury and uranium in the coal. This information will be used to demonstrate that the actual concentration of the listed pollutants is not significantly different than the amounts assumed in the Air Quality Effects Analysis.

Comment #58:

Will GTL Energy haul solid waste of fine coal particles from the plant? If so, what is in the particles? Will there be uranium in this waste?

Response to Comment #58:

GTL Energy will only dry and briquette coal and will not concentrate uranium or any other constituent in the coal. GTL Energy has stated that any coal dust collected in the baghouse will be re-introduced into the process.

Comment #59:

Why was the South Heart area chosen for this plant?

Response to Comment #59:

The Department analyzes the environmental impact from the plant. Why the company chose to locate the plant at a particular location is beyond the scope of the Department's review. Local officials are responsible for local zoning decisions.

Comment #60:

How will the GTL Energy plant and future coal development affect tourism?

Response to Comment #60:

This issue is beyond the scope of the air quality permit for the GTL Energy facility.

Comment #61:

What assurance is there that GTL Energy will always operate the control equipment?

Response to Comment #61:

By-passing control equipment is a violation of the permit. It would result in the loss of coal dust (product) and would also result in significantly darker plumes from the baghouse stacks. The darker plumes would likely result in a violation of the applicable opacity limits. A violation of the opacity limits could result in enforcement action and additional emissions testing requirements. Given the repercussions (loss of product, enforcement action, emissions testing) of not operating the control equipment, the Department expects GTL Energy to operate the control equipment.

Comment #62:

Why is the facility allowed to construct before a permit is issued?

Response to Comment #62:

For a minor source of air pollution, the North Dakota Air Pollution Control Rules allow certain construction activities prior to obtaining an air pollution control permit to construct. Although certain construction activities are allowed, installation of units that will emit air pollution is not allowed until a permit is issued.

Comment #63:

Why is there no ambient air quality monitoring near the plant?

Response to Comment #63:

The computer dispersion modeling analysis conducted by the Department predicts that the impact of small particulate matter emissions will be well below the allowable levels. Given that the impact is expected to be well below the allowable levels, the Department has deemed that an ambient air quality monitoring site is not warranted. This is consistent with North Dakota and Environmental Protection Agency requirements and policy.

Comment #64:

Prior to the passing of the zoning permit, did any of the Commissioners on that board contact the Department regarding the emissions standards applicable to the GTL Energy facility?

Response to Comment #64:

The Department is not aware of any contact from the Commissioners regarding emissions standards. However, it is the understanding of the Department that the zoning approval requires GTL to obtain all required approvals and permits from State agencies.

Comment #65:

When was the last time the Department changed emission standards?

Response to comment #65:

The Department periodically updates the North Dakota Air Pollution Control Rules to incorporate changes to the federal air pollution rules. State law does not allow the Department to establish new rules which are more stringent than the federal rules without extensive justification.

Comment #65:

Is a crematorium a major or minor source of emissions?

Response to Comment #65:

Crematoriums are classified as a minor source of air emissions.

Comment #66:

The Department needs to look at the impact of the coal being mined and also the impact of the coal being burned after it is dried at the GTL Energy plant.

Response to Comment #66:

The Department only considers emissions from the facility under consideration when determining if an air pollution control permit to construct should be issued for the facility. Note that regulations apply separately to mining and ultimate combustion of the coal.

Comment #67:

The Department should put the project on hold or deny the project until the federal standards regarding carbon dioxide are known.

Response to Comment #67:

The air quality permitting process only considers the rules which are currently applicable to a facility. The process does not consider possible future rules which may be applicable

to a facility. If federal standards are established which apply to the GTL Energy facility, GTL Energy will be required to comply with the standards.

Comment #68:

I am concerned about the effect of a coal mine on wells and water quality.

Response to Comment #68:

GTL Energy will not be operating a coal mine. The impact of a coal mine on the water quality and wells in the area will be addressed if an application for a coal mine is submitted to the Department.

Comment #69:

I request that a message be taken to the Governor and the Legislature requesting that carbon dioxide be looked at along with any other information when considering this project.

Response to Comment #69:

The purpose of the air quality permitting process is to determine if a facility complies with all existing air pollution control rules. The air quality permitting process does not create broad new policies, laws or other requirements.

Comment #70:

How will emissions/operations of GTL be monitored?

Response to Comment #70:

Operations will be monitored by a combination of emissions testing, fuel restrictions, pollution control equipment, recordkeeping and reporting. Periodic inspections will be conducted. In addition, the Department will respond to any complaints that are received.